

Appl. No.: 10/528,643
Amtd. Dated September 18, 2008
Reply to Office Action of September 11, 2008

REMARKS/ARGUMENTS

Claims 1-4 and 6-7 are pending. Claims 6 and 7 are allowed.

Claims 1, 2, and 4 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 2,341,974 to Browne.

Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Browne in view of U.S. Patent No. 5,214,920 to Leavesley.

Response to Rejections

The Office Action indicated that Applicant's arguments filed on July 9, 2008 were not persuasive because even though the method of increasing the clearance as rotational speed increases and decreasing the clearance as speed decreases is not known in the prior art, "Browne (US 2,341,974) teaches a structure that is capable of performing as claimed and therefore is anticipatory of the structural claims."

The Office Action thus bases the rejections on the premise that Browne's structure is capable of performing in the same way as the claimed structure, and therefore Browne discloses the claimed "means for increasing/decreasing the axial clearance" required by the rejected claims. In particular, the Office Action asserts that in Browne's centrifugal blower, the valve 36 that opens or closes to cause movement of the nozzle wall 21 is "independently" controllable for increasing or decreasing axial clearance between the wall 21 and the vanes 16 regardless of operating condition or regardless of what the vanes are doing.

But this is incorrect. In fact, in Browne's mechanism the movement of the valve 36 is entirely dependent on the movement of the vanes, such that the valve 36 is opened to move the wall 21 away from the vanes only when the vanes are being moved, and after the vanes come to rest, the valve 36 automatically closes and clamps the wall 21 against the vanes to keep the vanes from moving. This is summarized most clearly in Claim 5 of Browne, which recites "means to tilt [i.e., move] said vanes" and "means responsive to initiation of operation of said tilting means

to release said vane clamp to allow of free movement of said vanes".

To understand how Browne's mechanism works, note that the valve 36 is arranged so that opening the valve will vent to atmosphere a small annular chamber 33 in the housing. That chamber 33 is also in fluid communication (via holes 34) with a cavity 30 that is formed on one side by the movable wall 21. The cavity 30 is in fluid communication with the discharge volute 14 via holes 31, and thus the cavity 30 is generally at a higher pressure than the diffuser 15. As long as the pressure in the cavity 30 exceeds the pressure in the diffuser 15 (which it generally will as long as the valve 36 is closed), the wall 21 is urged to the left in the Figure, against the vanes, to clamp them. However, when the chamber 33 is vented to atmosphere by opening the valve 36, the cavity 30 is also vented to atmosphere, and then the pressure in the diffuser 15 is greater than that in the cavity 30, so that the wall 21 is urged away from the vanes 16.

The actuation of the valve 36, however, is not controllable independently of the vane movement, because the valve 36 is opened by fluid pressure acting on a piston 74 in a cylinder 73. The pressurized fluid is supplied via a line 72 from a cavity 71 formed in the servomotor 40 that moves the vanes. Specifically, the pressurized fluid is supplied through the line 72 as soon as the servo valve 47 moves either left or right to admit pressurized fluid into the cylinder 41 for moving the vanes in either one direction or the other (page 2, right column, lines 50-56). Movement of the servo valve 47 causes movement of a piston 42 in the cylinder 41, which in turn causes fluid to be pumped through the line 72 to the cylinder 73, thereby opening the valve 36. Browne arranges the servo motor 40 and valve 36 in this dependent fashion so that whenever the vanes are to be adjusted, the first thing that happens is the valve 36 is opened to vent the chamber 33 to atmosphere so that fluid pressure in the diffuser 15 will move the wall 21 away from the vanes to allow the vanes to move.

After the vane movement has been accomplished, the pressures on opposite sides of the piston 42 in the servo motor 40 will equalize and there will be no flow of fluid through the line 72, such that the valve 36 will close and the wall 21 will again clamp against the vanes.

Appl. No.: 10/528,643
Amdt. Dated September 18, 2008
Reply to Office Action of September 11, 2008

Thus, contrary to the Office Action's assertions, Browne does not disclose any structure even capable of "increasing the axial clearance between the outer wall (10) and the vanes (4) as the operational rotational speed of the turbocharger increases, and for decreasing the axial clearance between the outer wall (10) and the vanes (4) as an operational rotational speed of the turbocharger decreases", as claimed. With Browne's arrangement, there is zero clearance as long as the vanes are stationary. Transiently, the clearance increases to a non-zero value to allow the vanes to be moved, but as soon as the vanes come to rest again, the wall is clamped against the vanes and once again the clearance is zero.

This momentary increase in clearance to unclamp the vanes is not tied in any way to the rotational speed of the blower. Any time Browne's blower is operating at a steady-state condition (whether at high speed or low speed), the vanes will be stationary and therefore the wall 21 will be clamped against the vanes. Moreover, there is no way with Browne's device to control the valve 36 in the speed-dependent manner it would have to be controlled in order for Browne's device to meet the claimed "means for increasing/decreasing the axial clearance". Therefore, Browne's device is not capable of performing as claimed.

In short, Browne essentially discloses a vane clamp arrangement that automatically unclamps upon activation of the vane servo motor. Browne does not disclose or remotely suggest any variable-clearance arrangement such as the one claimed (nor does Leavesley).

For these reasons, Applicant respectfully submits that Claims 1-4 are patentable over Browne and Leavesley.

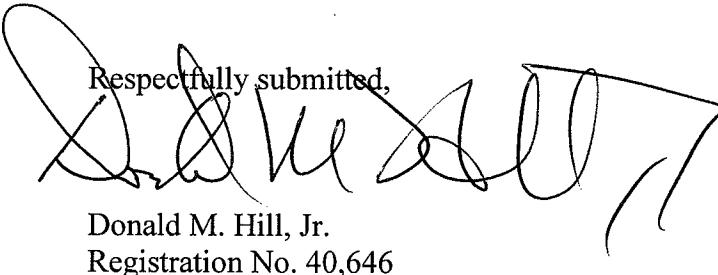
* * *

Appl. No.: 10/528,643
Amdt. Dated September 18, 2008
Reply to Office Action of September 11, 2008

Conclusion

Based on the above remarks, it is submitted that the application is in condition for allowance.

Respectfully submitted,



Donald M. Hill, Jr.
Registration No. 40,646

Send all correspondence regarding this application to:

Chris James
Honeywell Turbo Technologies
23326 Hawthorne Lane Blvd., Suite 200
Torrance, CA 90505-3576
Tel (310) 791-7850
Fax (310) 791-7855

ELECTRONICALLY FILED USING THE EFS-WEB ELECTRONIC FILING SYSTEM OF THE UNITED STATES PATENT & TRADEMARK OFFICE ON SEPTEMBER 18, 2008.